

War Modeling & Simulation



Let's Start At The
End—A VERY Good
Place To Start

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Our Wars

- **Dangerous**
 - **Expensive**
 - **Unpredictable**
 - **Frequently Don't Produce The Desired & Anticipated Results**
- 

Boosting Our War Success Rate



- **Suppose**
 - We Wanted To Improve Our War Track-Record Dramatically
 - We Wanted To Reduce The Cost Of Our Wars Significantly
 - We Wanted Our Wars To Be Smart Wars
 - We Wanted To Know In Advance Our War P_s , Costs, And Risks
 - We Wanted Modeling and Simulation To Play A Major Role In Improving Our War Track Record





To Boost Our War Success Rate

- **We Should Think About Starting Our Strategy And M&S Work At The End Of A War Rather Than The Beginning**



Smart Wars Start At The End With Good Outcomes 1

- You Are Better Off After The War Politically And Economically Than Had You Not Participated
- Your Opponent Is In A State That Leads To A Good And Lasting Peace
- Your Friends And Allies Are In A Better State (Political And Economic) Than Had There Been No War
- The War Lasted For A Very Short Time



Smart Wars Start At The End With Good Outcomes 2

- The War Cost You Very Little Objectively Or In Comparison To Returns
- You Lost Few Or No People
- Nobody Died On The Enemy Side That You Did Not Want To Die
- You Did Not Take On So Much Risk That Only Unlikely Luck Could Have Led To Success



Some Thoughts On How To Build Strategy And Model Backwards

- **Determine A Clear “Future Picture” After War’s End For Yourself, Opponents, And Friends**
- **Think In Big Picture Systems Terms— And How The Systems Must Change**
- **Determine Desired War Duration (Time)**
- **Decide How You Are Going To Transition (For Success And For Failure)**



A High Resolution Illustrative Future Picture 1

- **US GDP And Growth Rates Are Higher Post-war Than Prewar; Debt As A Percentage Of GDP Is No Greater Than Prewar; Cost Of Going To War Did Not Require A Defense “Supplemental”**
- **The Shooting Part Of The War Lasted Seven Days**
- **The Enemy Post-war Economy And Government Are Functioning At The Desired Level Within 30 Days**



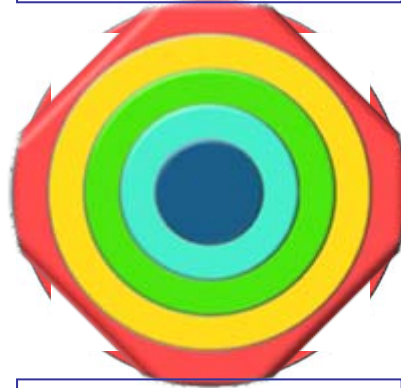
A High Resolution Illustrative Future Picture 2

- **There Were No US Fatalities**
- **There Were No Unplanned Enemy Casualties**
- **Capabilities And Functions That The US Wanted The Opponent To Have In The Post-war Period Were Operable Within 30 Days Of War Cessation**
- **The Transition To Peace Was Seamless**

Wars Take Place In Systems That Must Change Appropriately



External

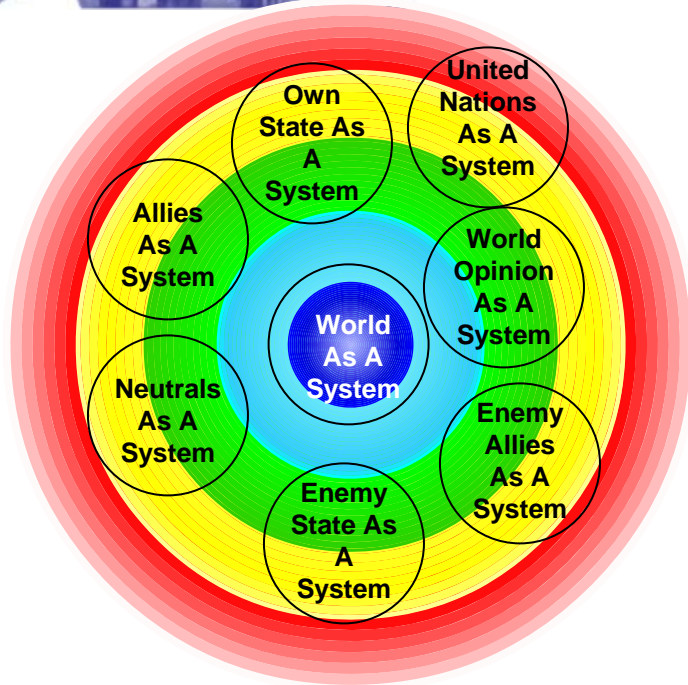


Internal



To Achieve Your Future Picture You Must Impose Your Desired System Effects On Systems In Your Path—Your Internal System And The External System

Start Analysis At The Right Place



International
Relations System

Start Here



Enemy State

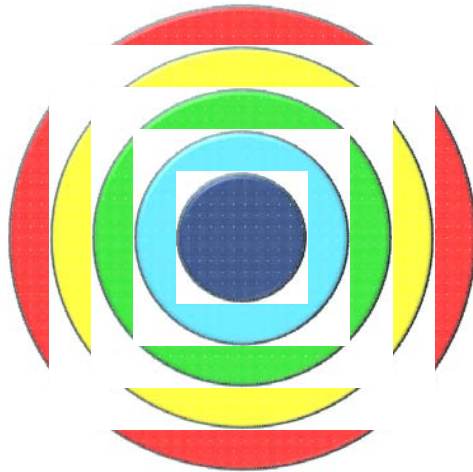
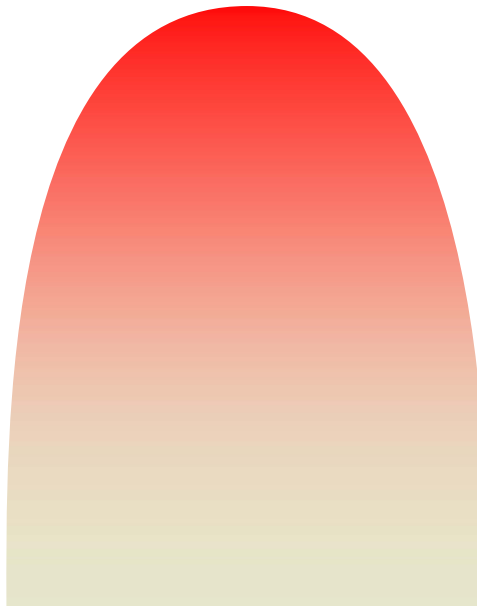
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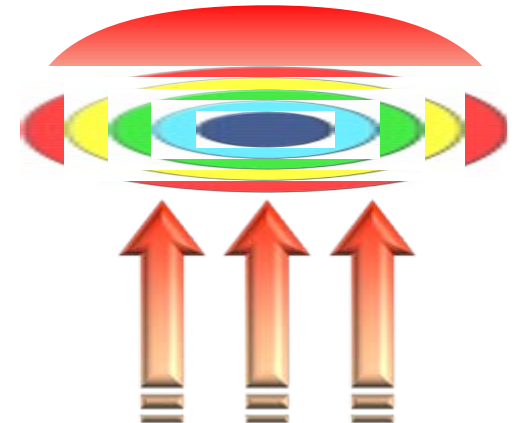
Enemy Military

Not Here

War Modeling Should Not Focus On Destruction



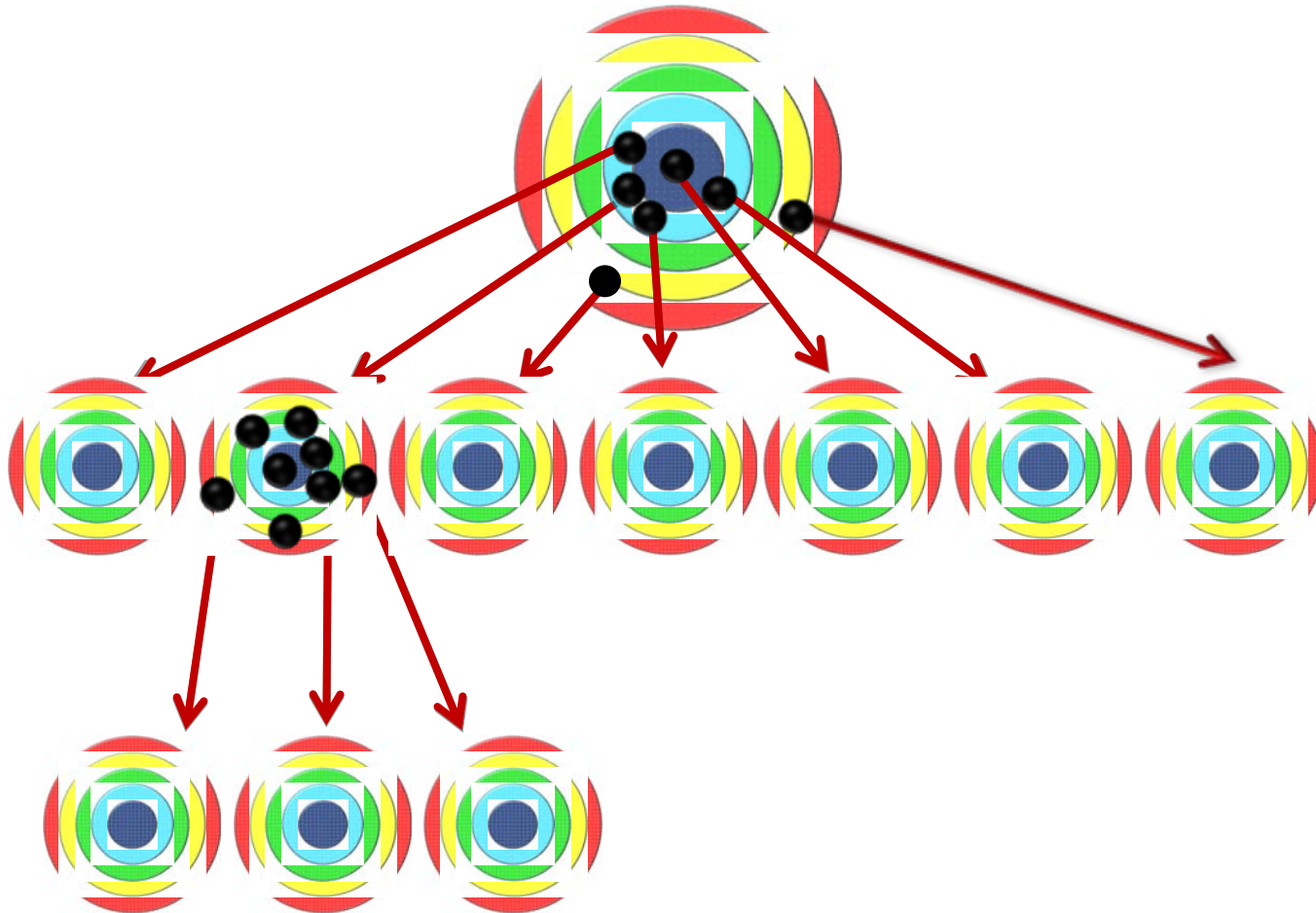
System Model



**Energy Change
Negative**

**Energy Change
Positive**

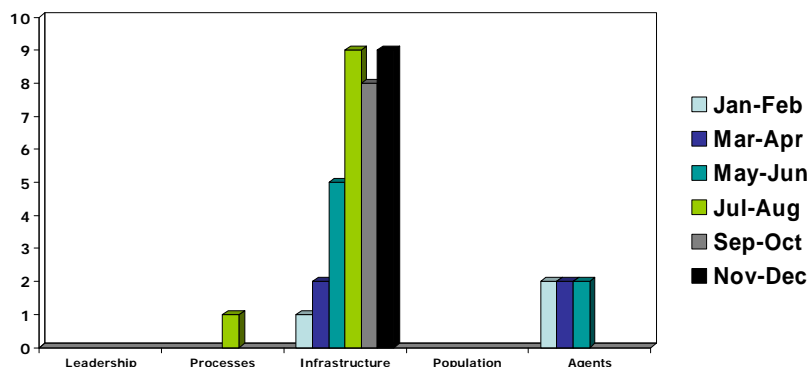
Work From Large To Small -Systems Are Fractal-





Time In War Is Not Linear

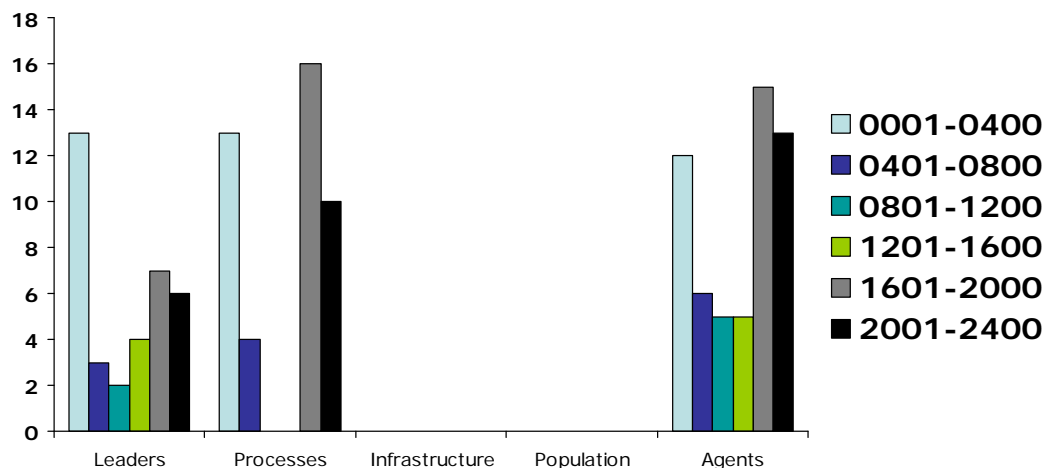
8th AF Strikes on Germany - 1943



50 “Targets” In
12 Months
Manageable

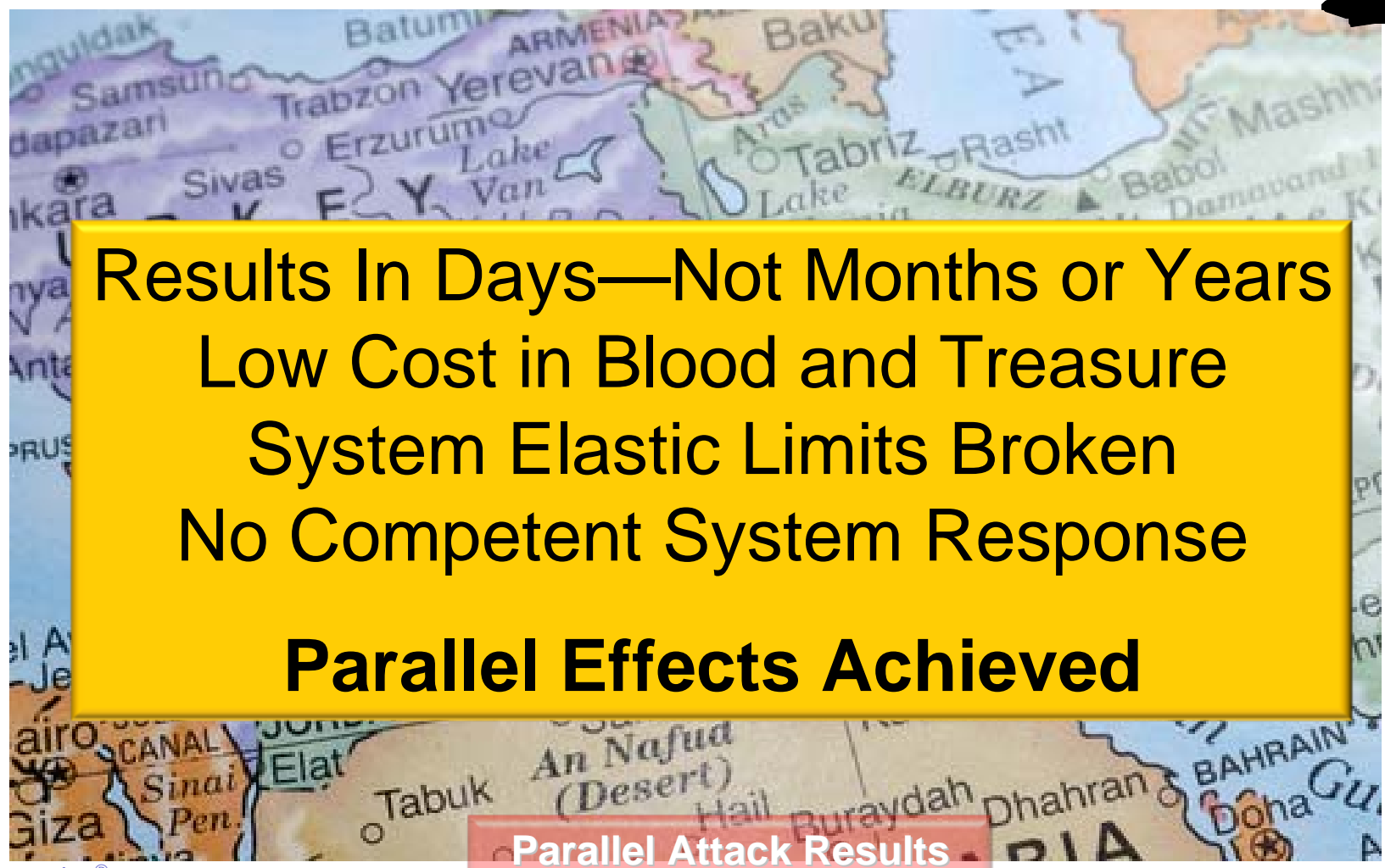
150 “Targets”
in 24 Hours:
System Goes
Into Shock

Desert Storm First 24 Hours





Parallel Attack Creates A Dramatically Different Impact

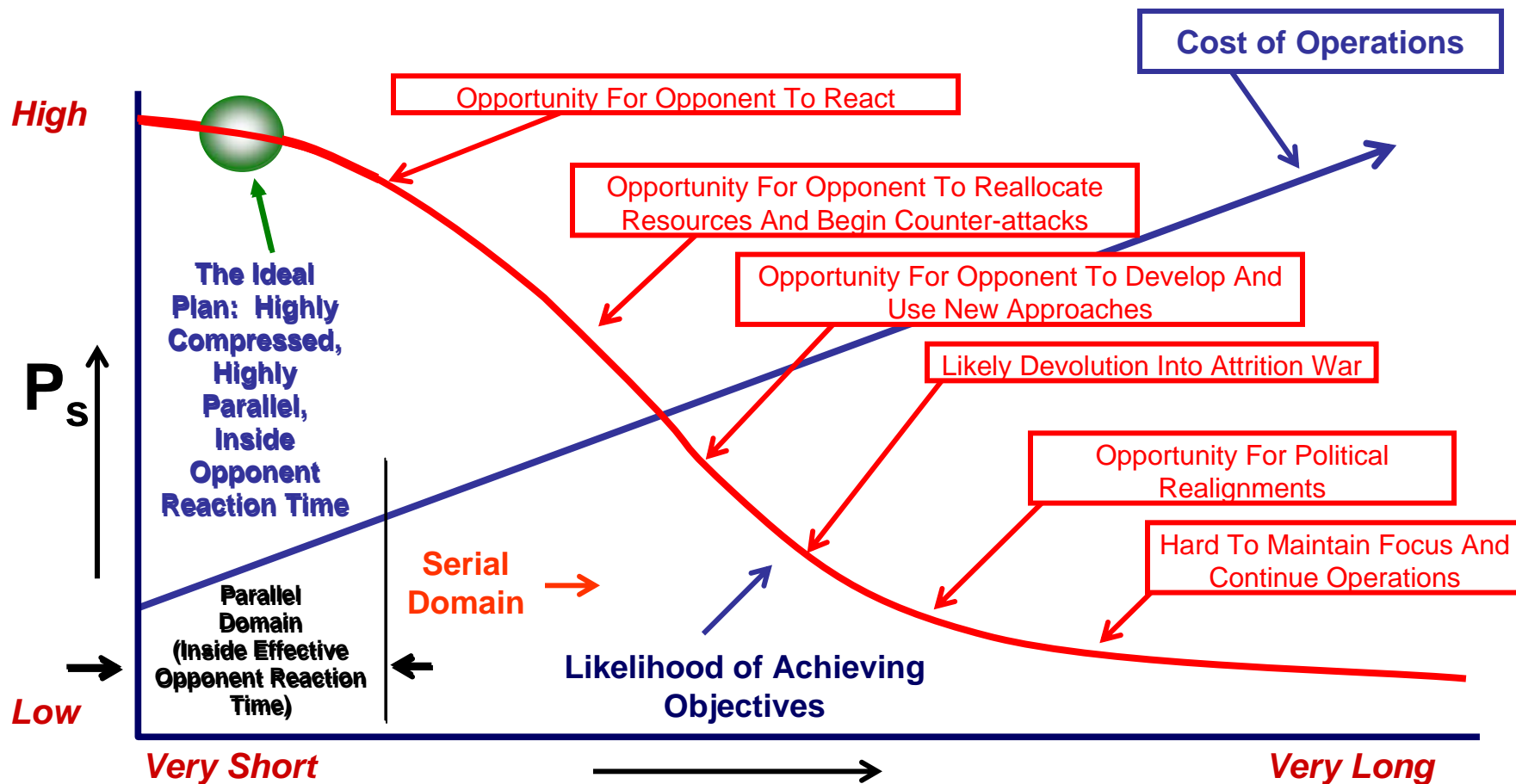


Results In Days—Not Months or Years
Low Cost in Blood and Treasure
System Elastic Limits Broken
No Competent System Response
Parallel Effects Achieved

Parallel Attack Results



Time Is Critical As A Thing Unto Itself And As A Risk Factor



Time To Affect Relevant Centers Of Gravity



War Transitions (Exits) From Successes

- **Successful**
 - Roman Conclusion Of Third Punic War
 - Concert Of Europe Following Battle Of Waterloo
 - Bismarck's Termination Of The 1866 War With Austria
 - MacArthur's Occupation Of Japan



War Transitions (Exits) From Failures

- **Disastrous**
 - **Schlieffen Plan: The War Must Be Won In France In 42 Days (WWI). No Exit Plan**
 - **German General Staff In Pre-Invasion Planning: We Must Take Moscow By December Of 1941 (WWII). No Exit Plan**
 - **"I Can Run Wild For Six Months (After Pearl Harbor) ... After That, I Have No Expectation Of Success." Admiral Yamamoto. No Exit Plan**
- **M & S Needs To Make Transitions An Integral Part Of Its Efforts!**



Summary

- **Grand Opportunity For M&S To Help Policy Makers Craft Smart War Decisions By**
 - Starting From The End Rather Than The Beginning
 - “Knowing” How A War Will End With A Future Picture
 - System Thinking To Avoid Focusing On Tactical Issues
 - Understanding That War Duration Time Must Be Established In Advance
 - Ensuring That Models Cover Transitions From War To Peace And From Interim Successes And Failures
 - Providing Sound Risk Assessments



A Model Alternative



Insights and Discussion

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